

DELL CREEK WATERSHED (LW26)

The Dell Creek watershed lies in northeastern Sauk County and southern Juneau County. The watershed is hilly with intensive agriculture. The overall annual population of the watershed for 2000 was estimated to be around 7,000 people. Seasonally, the communities and sights in the watershed draw a tremendous amount of tourists during the year, particularly in the summer months. Population growth in the municipalities during the 1990's was the highest in Lake Delton, which experienced over 30% population growth.

Table 1: Growth in Municipalities in the Watershed

<i>Municipality</i>	<i>1990</i>	<i>2000</i>	<i>% Change</i>
Lake Delton	1,466	1,982	35.2%
Lyndon Station	474	458	-3.4%
Wisconsin Dells	2,398	2,418	0.8%

Overall, broad-leaf deciduous vegetation covers the largest percentage of the watershed, but agricultural land use and grasslands cover a good portion of the watershed as well.

Table 2: Land Cover in the Watershed

<i>Land Cover</i>	<i>Percent of Watershed</i>
Forest (Total)	46.0%
<i>Broad-Leaf Deciduous</i>	34.4%
<i>Mixed Deciduous/ Coniferous</i>	7.4%
<i>Coniferous</i>	4.2%
Agriculture	30.2%
Grassland	13.5%
Wetland (Total)	5.6%
<i>Forested</i>	3.0%
<i>Emergent/Wet Meadow</i>	1.3%
<i>Lowland Shrub</i>	1.3%
Open Water	2.0%
Development	1.6%
Other	1.2%

The watershed is threatened by both urban and rural sources of nonpoint pollution. Intense commercial development pressure in the Wisconsin Dells and Lake Delton tourist area has an effect on the resources in the watershed. In addition to this development pressure, the watershed is also susceptible to nonpoint sources of pollution, particularly from erosion.

Watershed At A Glance

Drainage Area (m²): 135.5
Total Stream Miles: 103.0
Trout Stream Miles: 37.4
Sport Fishery Miles: 1.5

Lakes: Mirror, Blass, Delton, and Trout Lakes

Exceptional/Outstanding Resource Waters: Dell, Beaver, Camels, Gilmore, and Hulbert Creeks

Municipalities: Lake Delton, Wisconsin Dells, Lyndon Station

Major Public Lands:

- ◆ Mirror Lake State Park
- ◆ Dell Creek State Wildlife Area
- ◆ Hulbert Creek State Fishery Area
- ◆ Gilmore Creek State Fishery Area

Concerns and Issues:

- ◆ Nonpoint source pollution
- ◆ Algae blooms
- ◆ Development pressure
- ◆ Impoundments/hydrologic modifications
- ◆ Atrazine

Initiatives and Projects:

- ◆ Grant to assist with Mirror Lake improvement study
- ◆ Dell Creek Priority Nonpoint Source Pollution Abatement project
- ◆ Wetland restoration on private land
- ◆ USGS Gauging Station

A priority watershed nonpoint source pollution abatement project to address this issue was initiated in the watershed in 1995 and is expected to run through 2008. The WDNR currently owns a good portion of the stream corridors in the watershed so the project will focus on improving barnyards and reducing bank erosion on tributary streams. By the third year of the project, 2000, only 10% of the eligible landowners had signed up for improvements. By 2000, 40% of the barnyard improvement goal had already been installed. In addition, some other problem yards are no longer in operation.

Most of the watershed located in Sauk County is also in an atrazine prohibition area. These areas indicate that elevated levels of atrazine, an herbicide used on corn, has been found in some tested private water wells. Soils are permeable which has allowed atrazine to reach groundwater in some locations. See Appendix B.

There are three permitted point source discharges in the watershed; the Lyndon Station Wastewater Treatment Plant which discharges to Lyndon Creek and Christmas Mountain Resort and Arrowhead Resort which both discharge to groundwater.

The land and wildlife resources of the watershed are also potentially impacted by urban and rural land uses. The Dell Creek Watershed contains a secondary landscape that is a priority site for grassland bird management in the basin. This site, located in the Mirror Lake Barrens including the Van Zelst Barrens and Mirror Lake State Park. Within these landscapes are priority grassland habitats for managing grassland birds. The Mirror Lake Barrens have conifer barrens, dry old field, and upland shrub. The Van Zelst Barrens and Mirror Lake State Park contain conifer barrens, and sand prairie (goat prairie). The Van Zelst Barrens also contains dry old field habitat.

In addition to these resources, the Dell Creek Watershed also has a variety of other good quality habitats and rare plant communities that are listed on the state's Natural Heritage Inventory, (NHI), kept by the Bureau of Endangered Resources. The communities found in the watershed include:

- ◆ Dry cliff
- ◆ Dry prairie
- ◆ Hemlock relict
- ◆ Moist cliff
- ◆ Northern dry forest
- ◆ Northern dry-mesic forest
- ◆ Pine relict
- ◆ Sand barrens
- ◆ Sand meadow
- ◆ Southern dry forest
- ◆ Southern dry-mesic forest
- ◆ Southern mesic forest
- ◆ Alder thicket
- ◆ Emergent aquatic
- ◆ Floodplain forest
- ◆ Northern sedge meadow
- ◆ Northern wet forest
- ◆ Shrub-carr
- ◆ Southern sedge meadow
- ◆ Springs and spring runs, hard
- ◆ Springs and spring runs, soft
- ◆ Stream--fast, hard, cold
- ◆ White pine-red maple swamp

In addition to these special communities, the watershed is also home for a variety of rare plant and animal species including; 8 species of birds, 4 species of butterflies, 2 species of beetles, 5 species of dragonflies, 6 species of fish, 1 species of frog, 1 species of lizard, 7 species of

mussels, and 29 species of plants. These plants and animals are also listed on the state's Natural Heritage Inventory.

The Mirror Lake State Park is found in the watershed just southwest of Lake Delton on Dell Creek. Dell Creek State Wildlife Area is approximately 2,125 acres and located northeast of Reedsburg. The wildlife area offers opportunities to trout fish and hike. The Gilmore and Hulbert State Fishery Areas are also in the watershed.

STREAMS AND RIVERS IN THE WATERSHED

Beaver Creek

Beaver Creek is a tributary to Dell Creek in Sauk County. The creek is classified as a Class II trout stream and exceptional resource water (ERW). Agriculture, wetlands, woodlands and residential sub-developments dominate land use along the creek. The WDNR owns about 380 acres of stream corridor near the confluence with Dell Creek. A survey conducted in 1995 found very low numbers of trout. The stream has problems with sediment and nutrient loading from agriculture, development pressure, and lack of in-stream habitat. The stream has limited in-stream habitat, which has an impact on the stream's potential to support more trout. The stream, however, has high value for other wildlife including ruffed grouse, woodcock and white-tail deer.

Camels Creek

Camels Creek is a tributary to Dell Creek above Beaver Creek. The creek is classified as a Class II trout stream for about 2 miles of its length and an exceptional resource water (ERW). Land use along the stream is agriculture, woodland and wetland. The stream experiences problems as a result of sediment and nutrient loading from agricultural fields and barnyards, streambank pasturing, streambank erosion, lack of in-stream habitat, hydrologic manipulation and low flow. A survey conducted in 1995 found naturally reproducing brook trout. The stream's limited in-stream habitat, however, has an impact on the stream's potential to support trout throughout their entire life cycle. Macroinvertebrate samples indicated good water quality. The stream provides habitat for other wildlife including wild turkey, ruffed grouse, woodcock and white-tail deer.

Dell Creek

Dell Creek is a warm water sport fishery for the lower 1.5 miles and a Class II trout stream for the upper 10.5 miles of its length. The creek is an exceptional resource water (ERW). The land use along the stream is agricultural with some woodlands and wetlands. Much of Dell Creek's length in Sauk County is publicly owned.

The main problems on the creek are sediment and nutrient loading from agricultural sources, and a lack of in-stream habitat. Surveys conducted in 1995 found low numbers of trout and determined the water quality to be from fair to poor in some locations. This indicates that the stream has experienced some severe environmental damage. It is thought that the limited habitat is one of the limiting factors for aquatic life.

There are also two large impoundment's on Dell Creek; one creates Lake Delton and the other creates Mirror Lake. Silt and sediment from farm fields are thought to be a problem in the stream and are causing a sediment problem in the upper end of Mirror Lake. Suspected high nutrient inputs to Mirror Lake from Dell Creek are thought to be fueling the excessive aquatic plant and algae growth in the lake.

Gilmore Creek

Gilmore Creek is a tributary to the Wisconsin River. The creek has been impounded to create Trout Lake. The creek is considered a Class I trout stream and exceptional resource water (ERW) below the lake and a Class II trout stream above the impoundment. Sediment and nutrient loading from agricultural runoff and timber harvesting, hydrologic manipulation, poor habitat and instream macrophyte growth impact the creek. Macroinvertebrate samples collected in 1995 found better water quality above the lake, but both above and below were thought to be of good quality. Other surveys found very poor conditions above the lake and fair conditions downstream. Lack of in-stream habitat affects the fishery.

Harrison Creek

Harrison Creek is a tributary to Dell Creek at Mirror Lake. Harrison Creek is 5 miles and the lower 3.6 miles are considered a Class II trout stream. Sediment and nutrient loading from agricultural fields and barnyards, streambank erosion, hydrologic manipulation, and lack of in-stream habitat impact water quality. Harrison Creek was stocked until 1994. At that time, nonpoint source pollution was so severe that stocking efforts were discontinued. These efforts may once again take place if nonpoint source pollution is addressed. Surveys in 1995 found good water quality, but the lack of habitat and the location of some major sources of nonpoint pollution affect the stream's potential in various locations.

Holtzlander Creek

Holtzlander Creek is a tributary to Lyndon Creek. The creek is considered a marginal Class III trout stream in the lower 4 miles. The creek is impacted by a lack of in-stream habitat, low flow, temperature, and runoff from agricultural fields and barnyards. Fish surveys conducted in 1995 found the water quality to be poor to fair, while macroinvertebrate samples indicated that the water quality was good in some locations. Organic loading in the stream is most likely a problem. Overall, the habitat in the stream degraded from the headwater areas of the stream down to its confluence with Lyndon Creek.

Hulbert Creek

Hulbert Creek is a tributary to the Wisconsin River at Wisconsin Dells. It is considered trout waters for four miles of its length, 2.8 miles of the upper reaches are a Class I trout stream and an exceptional resource water (ERW). The downstream reach is affected by the intense urban development of Wisconsin Dells. Other problems on the creek include agricultural nonpoint sources of pollution including the destruction of spring heads due to cattle, beaver dams and hydrologic modification. The stream has little in-stream habitat, which is thought to be limiting the stream's fishery potential. A rare aquatic species has been found in this creek in past surveys. The WDNR owns over 300 acres along the corridor of Hulbert Creek that is open to the public.

Lyndon Creek

Lyndon Creek is an 8-mile tributary to the Wisconsin River. The lower 6 miles of the creek are considered a marginal Class III trout stream. Walleye, northern pike, smallmouth bass and some panfish find their way into the lower reaches of the creek from the Wisconsin River. Land cover in the area is agriculture and wetlands. Cropland and streambank erosion, barnyard runoff and stormwater runoff from Lyndon Station impact Lyndon Creek. These sources of pollution impact the habitat in the creek. Surveys conducted in 1995 found the creek to have fair water quality. In-stream habitat is the major limiting factor to the fishery. Dissolved oxygen monitoring in 2001 have shown no impact from the wastewater treatment plant.

Spring Brook

Spring Brook is a small warm water tributary to Lake Delton. An impoundment on the stream creates Blass Lake. The stream is considered a warm water forage fishery. Elevated temperatures, low dissolved oxygen, low flow and limited in-stream habitat impact the stream. These problems are most likely the result of nonpoint sources of pollution including cropland erosion and barnyard runoff, hydrologic modification and urban stormwater runoff. A 1999 macroinvertebrate survey indicated fair water quality. See Blass Lake.

Tracy Creek

Tracy Creek is a tributary to Holtzlander Creek. Two miles of the creek are considered a marginal Class III trout stream. The creek is impacted by a lack of in-stream habitat, low flow, temperature, and runoff from agricultural fields and barnyards. Some of the sport fish that migrate into Lyndon Creek can be found in Tracy Creek during different stages of their life cycle.

Wisconsin River

A portion of the Wisconsin River makes the boundary between this watershed and the Duck Creek Watershed along the Juneau and Adams county line. There is a USGS gauging station at Wisconsin Dells. For more information on the Wisconsin, see page 90.

LAKES IN THE WATERSHED

Blass Lake

Blass Lake was created in 1929 by impounding Springbrook Creek just outside of Lake Delton. It is a 34-acre hyper-eutrophic lake with poor water quality and excessive algae and aquatic plant growth. The lake has a good panfish, largemouth bass and northern pike fishery.

Lake Delton

Lake Delton is a 267-acre impoundment of Dell Creek. Much of its shoreline has been developed with summer homes, year-round homes and condominiums. The fishery of the lake is northern pike, walleye, largemouth bass, channel catfish and panfish.

The lake is eutrophic and has poor water quality, which is common to impoundments in southwest Wisconsin. Some of the water quality problems may be due to construction site erosion as well as rural nonpoint source pollution. The lake is experiencing increasing development pressure and may also experience problems as a result of urban stormwater runoff.

As a result of the development and the popularity of the lake for recreational and tourism purposes, the lake may also experience usage conflicts, particularly during the summer. Sewage pollution used to be a threat to the lake, but municipal sewer now serves residences around the lake. The lake has nuisance aquatic weed growth that has required chemical treatment. Eurasian water milfoil has been found in the lake.

The Lake Delton Lake Association and the Village of Lake Delton contracted for a lake study and management plan to be developed for Lake Delton. The information collected and its analysis points to nonpoint sources of pollution in the Dell Creek watershed as being the primary sources of phosphorus loading to the lake.

Mirror Lake

Mirror Lake is a 137-acre impoundment of Dell Creek above Lake Delton. Mirror Lake consists of two bodies of water, sometimes considered Upper Mirror Lake and Lower Mirror Lake. These two bodies of water are separated by a one-mile stretch of Dell Creek. Public ownership of part of the shoreline and public access to the lake is provided by Mirror Lake State Park, which surrounds the perimeter of the lake. The fishery of the lake includes bluegill, walleyes, largemouth bass, northern pike and other panfish.

The lake is eutrophic and has relatively poor water quality, which is common to eutrophic lakes and impoundments. Self-help monitoring on the lake indicates the lake to have generally poor water clarity conditions. Sedimentation, particularly in the upper end of the lake is a problem. It is thought that this sedimentation may be part of the reason for the decline of the wild rice bed in the lake. In addition, nuisance growth of aquatic vegetation exists on the lake, particularly the growth of duckweed. Eurasian water milfoil has been found in the lake. Recently, the Town of Delton sponsored a Lake Planning Grant for the improvement of the lake.

Trout Lake

Trout Lake is an 11-acre impoundment of Gilmore Creek. The lake contains brown trout, rainbow trout, largemouth bass and panfish. The lake is eutrophic and has excessive duckweed and macrophyte growth. The dam is in need of repair. Removal of the lake would benefit the trout stream of Gilmore Creek. There is no public access on the lake.

RECOMMENDATIONS (LW26)

- ◆ The lake bottom sediments in **Lake Delton** should be monitored.
- ◆ Fish in **Lake Delton** should be monitored for the presence of toxic substances.
- ◆ Beaver on trout streams in the watershed should be controlled.
- ◆ Population of wild trout in streams in the watershed should be assessed.
- ◆ Habitat improvement should be conducted on creeks in the watershed, especially on **Camels Creek**.
- ◆ Wildlife habitat in the watershed should be improved.
- ◆ Construction site erosion control practices should be implemented.
- ◆ Native grassland buffers, grassed waterways and other woodland and wetland buffers should be developed in the watershed to retain nutrients and sediment and prevent them from entering surface water in the watershed.
- ◆ **Hulbert Creek** should be surveyed to determine if rare aquatic elements previously found in the stream is still present.
- ◆ The headwaters areas of the creeks in the watershed should be stabilized by protecting springhead areas.
- ◆ The large cracks and areas of leaking water on the Trout Lake/Gilmore Creek impoundment should be examined.
- ◆ Sediment and nutrient loading from timber harvesting on **Gilmore Creek** should be removed.
- ◆ The small impounded area on **Harrison Creek** upstream of Shady Lane Road should be removed.
- ◆ Bacteria levels entering **Lake Delton** should be reduced.
- ◆ A plan should be developed to address urban stormwater runoff issues/impact to surface water in the watershed.
- ◆ **Harrison Creek** should be evaluated for the potential to improve the trout fishery in the creek through the development and implementation of a fisheries management plan.
- ◆ The impoundment on **Gilmore Creek** that creates **Trout Lake** should be evaluated for removal.
- ◆ Improve instream habitat on **Dell Creek**.

- ◆ Watershed map

Streams in the Dell Creek Watershed (LW26) Sauk and Juneau Counties Area: 135.5 sq miles

Stream Name	WBIC	Length (miles)	Existing Use	Potential Use	Supporting Potential Use	Codified Use and Trout Stream Classification	Proposed Modified Use	303(d) Status	Rare Aquatic Species	Use Impairment		NPS Rank	Monitored/Evaluated/Unassessed	Data Level	Trend	Ref.*	
										Source	Impact						
Beaver Creek	1297300	1.6	COLD II	same	Part	COLD II/ERW	same	N	N	CL, DEV	HAB	NR	M (1995)	H2	U	12, 13, 20	
Camels Creek	1297500	0-1.8	COLD II	same	Part	COLD II/ERW	same	N	N	PSB, CL, BY, HM	HAB	NR	M (1995)	H2, B4	U	12, 13, 20	
		1.8-3	U	U	N	N	U										
Dell Creek	1295200	0-1.5	WWSF	same	Full	ERW	same	N	N	CL, BY	HAB, TEMP	M	M (1995)	H2, B3	U	5, 6, 13, 20	
		1.5-10.5	COLD II	same	Full	COLD II/ERW (above Hwy 23)	same	N	U								
		10.5-24	WWFF	same	Part	ERW	same	N	U								
Gilmore Creek	1299800	0-2	COLD I	same	Full	COLD II/ERW	same	N	N	NPS, CL, HM	HAB	M	M (1995)	H2, B3	U	5, 6, 13, 20	
		2-3.5	COLD II	same	Part	COLD II	same	N	U								
Harrison Creek	1296400	0-3.6	COLD II	same	Part	COLD II	same	N	N	NPS, HM, BY, CL, PSB	HAB	NR	M (1995)	H2, B3	U	12, 13, 20	
		3.6-5	U	U	U	DEF	same	N	U								
Holtzlander Creek	1300800	0-4	COLD III	same	Part	COLD III	same	N	N	BY, CL, NPS	HAB	NR	M (1995)	H2, B3	U	5, 6, 13, 20	
		4-6	U	U	U	DEF	same	N	U								
Hulburt Creek	1298500	0-1.2	COLD II	same	Part	COLD II	same	N	Y	NPS, CL, BY, PSB, BDAM, HM, DEV	HAB, TEMP	M	M (1995)	H2, B3	U	5, 13, 20	
		1.2-4	COLD I	same	Full	COLD II/ERW	same	N	U								
		4-6	U	U	U	DEF	same	N	U								
Lyndon Creek	1300700	0-6	COLD III	same	Part	COLD III	same	N	N	CL, BY, SB, URB	HAB	NR	M (1995)	H2, B3	U	5, 6, 13, 20	
		6-8	U	U	U	DEF	same	N	U								
Spring Brook	1295600	4	WWFF	same	U	DEF	same	N	N	CL, BY, HM, URB	HAB, TEMP, DO	NR	M (1995)	H2, B3, P1	U	5, 13, 20	
Tracy Creek	1300900	0-2	COLD III	same	Part	COLD III	same	N	N	HM, PSI	NUIT, HAB	NR	M (1995)	H2	U	5, 6, 13, 20	
		2-4	U	U	U	DEF	same	N	U								
Unnamed streams		37.5				DEF											
Total Stream Miles		102.6															
		4.8															
		18.7															
		12															
		1.5															
		17.5															
		48.1															

***The numbers in this column refer to the References found in the corresponding Watershed Narrative. See Appendix J: "How to Read the Stream Tables," in Chapter 7 of the State of the Lower Wisconsin River Basin Report.**

Lakes in the Dell Creek Watershed (LW26)

Sauk and Juneau Counties

Lake Name	WBIC	County	Surface Area (Acres)	Max Depth	Lake Type	Winterkill	Access	SH	Hg	MAC	LMO	TSI	Lake Plan or Prot	P Sens	Comments
Blass Lake	1295800	Sauk	34	16	DG	N	R							2	Hyper-eutroph., dense plants, APM studies
Delton Lake	1295400	Sauk	267	16	DG	Y	BR, BF	X	M	EWM	ASSC	65	PLAN	2	heavy dev. and rec. use
Mirror Lake	1296000	Sauk	137	19	DG	N	BR, BF, P	X	M	EWM	ASSC	57	PLAN	2	NPS problems
Seeley Lake	1275500	Sauk	49	10	DG	Y	BR							2	
Kilbourn Flowage	1299600	Juneau	1868	35	DG		BR					66.6		2	

See Appendix K: "How to Read the Lake Tables," in Chapter 7 of the Lower Wisconsin State of the Basin Report.

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